

### **AMENDMENTS TO THE CLAIMS**

Please replace all prior versions, and listings, of claims in the application with the following list of claims:

1-35. (Canceled)

36. (Previously Presented) A method for determining whether monosaccharides or disaccharides of a query sequence match monosaccharides or disaccharides of a polysaccharide, wherein the query sequence is represented by a first data structure, tangibly embodied in a computer-readable medium, including an identifier that includes fields, each field for storing a value for the monosaccharides or disaccharides of the query sequence, and wherein the polysaccharide is represented by a second data structure, tangibly embodied in a computer-readable medium, including an identifier that includes fields, each field for storing a value for the monosaccharides or disaccharides of the polysaccharide, wherein one or more of the values of the second data structure correspond to the nature and degree of sulfation or acetylation of the monosaccharides or disaccharides of the polysaccharide that alone do not provide the identity of the monosaccharides or disaccharides, the method comprising acts of:

(A) a user providing input for the fields of the first data structure with an input device, wherein one or more of the values of the first data structure correspond to the nature and degree of sulfation or acetylation of the monosaccharides or disaccharides of the query sequence that alone do not provide the identity of the monosaccharides or disaccharides;

(B) generating masks with the values stored in the fields of the first data structure;

(C) performing binary operations on the values stored in the fields of the second data structure with the masks to generate results; and

(D) determining whether the monosaccharides or disaccharides of the query sequence match the monosaccharides or disaccharides of the polysaccharide with the results;

wherein the polysaccharide comprises disaccharide repeat units comprising hexosamine and glucuronic or iduronic acid that are linked by  $\alpha/\beta$  1 $\rightarrow$ 4 glycosidic linkages.

37. (Currently Amended) The method of claim 36, wherein each of the fields of the first and second data structures is a ~~are~~-bit field[[s]].

38-53. (Canceled)

54. (Currently Amended) The method of claim 36, wherein each of the fields of the first and second data structures is a ~~are~~-non-character based field[[s]].

55. (Previously Presented) The method of claim 36, wherein each of the identifiers of the first and second data structures is represented as a numerical identifier.

56. (Previously Presented) The method of claim 55, wherein each of the identifiers of the first and second data structures is represented as a single digit hexadecimal number.

57. (Previously Presented) The method of claim 55, wherein each of the identifiers of the first and second data structures is represented as a decimal value.

58. (Previously Presented) The method of claim 57, wherein the decimal value can be reduced to a plurality of prime divisors.

59. (Previously Presented) The method of claim 36, wherein the monosaccharides or disaccharides of the polysaccharide are monosaccharides.

60. (Previously Presented) The method of claim 36, wherein the monosaccharides or disaccharides of the polysaccharide are disaccharides.

61. (Previously Presented) The method of claim 36, wherein the values corresponding to the monosaccharides or disaccharides of the polysaccharide correspond to one or more properties of the monosaccharides or disaccharides of the polysaccharide.

62. (Previously Presented) The method of claim 61, wherein the one or more properties comprise the identity of the monosaccharides or disaccharides of the polysaccharide.

63. (Previously Presented) The method of claim 61, wherein the one or more properties comprise the exact chemical structure as defined by the basic building block of the polysaccharide.

64. (Previously Presented) The method of claim 61, wherein the one or more properties comprise the charge of the monosaccharides or disaccharides of the polysaccharide.

65. (Previously Presented) The method of claim 61, wherein the one or more properties comprise the molecular weight of the monosaccharides or disaccharides of the polysaccharide.

66. (Previously Presented) The method of claim 61, wherein the one or more properties comprise the nature and degree of sulfation of the monosaccharides or disaccharides of the polysaccharide.

67. (Previously Presented) The method of claim 61, wherein the one or more properties comprise the nature and degree of acetylation of the monosaccharides or disaccharides of the polysaccharide.

68. (Previously Presented) The method of claim 61, wherein the one or more properties comprise the nature or identity of substituents of the monosaccharides or disaccharides of the polysaccharide.

69. (Previously Presented) The method of claim 61, wherein the act of determining includes an act of determining that one or more properties of the monosaccharides or disaccharides of the query sequence match the one or more properties of the monosaccharides or disaccharides of the polysaccharide when the at least one result has a non-zero value.

70. (Canceled)

71. (Previously Presented) The method of claim 36, wherein the at least one binary operation includes at least one logical AND operation.

72. (Previously Presented) The method of claim 37, wherein the at least one binary operation includes acts of performing a logical AND operation on the values stored in the bit fields of the second data structure using each of the masks to generate intermediate results, and combining the intermediate results using at least one logical OR operation to generate the results.

73. (Currently Amended) A method for determining whether a disaccharide of a query sequence matches a disaccharide of a polysaccharide, wherein the query sequence is represented by a first data structure, tangibly embodied in a computer-readable medium, including an identifier that includes one or more fields, each field for storing a value for the query sequence, and wherein the polysaccharide is represented by a second data structure, tangibly embodied in a computer-readable medium, including an identifier that includes one or more fields, each field for storing a value for the polysaccharide, wherein the second data structure comprises one or more values that indicate whether the polysaccharide contains an iduronic or glucuronic acid, the method comprising acts of:

(A) a user providing input for the one or more fields of the first data structure with an input device;

(B) generating at least one mask with the value or values stored in the one or more fields of the first data structure;

(C) performing at least one binary operation on the value or values stored in the one or more fields of the second data structure using the at least one mask to generate at least one result; and

(D) determining whether the disaccharide of the query sequence match the disaccharide of the polysaccharide ~~heparin-like glycosaminoglycan~~ with the at least one result;

wherein the polysaccharide comprises disaccharide repeat units comprising hexosamine and glucuronic or iduronic acid that are linked by  $\alpha/\beta$  1 $\rightarrow$ 4 glycosidic linkages.

74. (Previously Presented) The method of claim 61, wherein the one or more properties comprise the presence or absence of iduronic or glucuronic acid.

75. (Previously Presented) The method of claim 73, wherein one or more of the values of the second data structure correspond to the nature and degree of sulfation or acetylation of the disaccharide of the polysaccharide.

76-77. (Canceled)